Speaker: **Emeric Roulley** (SISSA, Trieste)

Title: *Periodic vortex patches in bounded simply-connected domains*

Summary: We consider the Euler equations within a simply-connected bounded domain. The dynamics of a single point vortex is governed by a Hamiltonian system, with most of its energy levels corresponding to time-periodic orbits. We show that, under certain non-degeneracy conditions, it is possible to desingularize most of these trajectories into time-periodic concentrated vortex patches. We provide concrete examples of these non-degeneracy conditions, which are satisfied by a broad class of domains, including convex ones. Additionally, we will present a vortex duplication mechanism to generate synchronized time-periodic motion of multiple vortices.